IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:
Kenneth L. Levy
Application No.: 10/602,549
Filed: June 23, 2003
For: Embedded Data Windows in Audio Sequences and Video Frames

Art Unit: 2175
Conf. No.: 2418

VIA ELECTRONIC FILING

Examiner: Jordany Nunez
Date: August 6, 2008

APPEAL BRIEF

Mail Stop Appeal Brief – Patents
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Appellant respectfully requests the Board of Patent Appeals and Interferences (hereafter the "Board") to *reverse* the outstanding final rejection of the pending claims.

This Appeal Brief is in furtherance of a Notice of Appeal filed April 7, 2008. Please charge the fee required under 37 CFR 1.17(f) or any other fee needed to consider this Appeal Brief to our deposit account no. 50-1071.

TABLE OF CONTENTS

REAL PARTY IN INTEREST

The real party in interest is Digimarc Corporation, by an assignment from the inventor recorded at Reel 014940, frames 0177-0178, on February 2, 2004.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1-16, 23, 25, 27-30, 22 and 35-40 are pending in the present application. *See the final Office Action, Office Action Summary, item 4.*

Claims 1-16, 23, 25, 27-30, 22 and 35-40 stand finally rejected. *See the final Office Action, Office Action Summary, item 6.*

Claims 17-22, 24, 26, 31, 32 and 34 were previously canceled. *See the March 15, 2007 Amendment, Amendments to the Claims.*

STATUS OF AMENDMENTS

All earlier-filed amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

The presently claimed invention provides solutions to help thwart modern-day pirates. These pirates sneak into movie theaters armed with video recorders or digital camcorders. After stealing a movie, the pirates sell their bootlegged copies for pennies on the dollar – robbing artists of billions. The claims embed or detect information hidden in media content (e.g., video) to help thwart this and other forms of piracy. For some of the claims, information embedded within content is visually perceptible when viewing an individual portion of the content. However, the information becomes imperceptible when the embedded content is rendered or played in real time. Support for the independent and separately argued claims is presented below.

Claim 40 recites a detecting method including: obtaining content, the content including auxiliary data embedded therein, the embedding being accomplished through modifications of portions of the content [see, e.g., pages 6-7, paragraph [0026], pages 8-11, paragraphs [0031] - [0037]], the modifications occurring prior to obtaining the content, the modifications being humanly perceptible if examined in a finite segment or frame of the content, but provided in the content so as to be humanly imperceptible when examined as the content is rendered or projected in real-time [see, e.g., pages 6-7, paragraph [0026], pages 8-11, paragraphs [0031] - [0037]]; averaging a plurality of content portions [see, e.g., page 12, paragraph [0041] and paragraph [0046] spanning pages 13-14]; and detecting the auxiliary data from data representing averaged content portions, the auxiliary data being relatively more detectable from the data representing averaged content portions compared to individual portions including the auxiliary data [see, e.g., page 12, paragraph [0041] and paragraphs [0046] – [0048] spanning pages 13-14].

Claim 16 recites a detection method for the video embedded according to claim 1, comprising averaging a plurality of the video frames including the first and second frames, wherein the averaging improves the signal to noise ratio of the identification data to video content [see, e.g., page 12, paragraph [0041] and paragraphs [0046] – [0048] spanning pages 13-14].

Claim 33 recites a detector to detect the data provided according to claim 28, wherein the detector averages a plurality of the video frames so that the provided data becomes consciously perceptible [see, e.g., page 12, paragraph [0041] and paragraphs [0046] – [0048] spanning pages 13-14].

Claim 1 recites a method of embedding identification data in video, the video comprising a plurality of video frames. The method includes: embedding the identification data in a first video frame prior to distribution or projection of the video, the embedded identification data being visually perceptible upon examination of the first frame [see, e.g., pages 6-7, paragraph [0026], pages 8-11, paragraphs [0031] - [0038]]; selecting a second video frame, wherein the first and second video frames are separate frames [see, e.g., FIG. 2, and paragraph [0038], page 11]; and embedding the identification data in the second video frame prior to distribution or

projection of the content, the embedded identification data being visually perceptible upon examination of the second frame, wherein the identification data is generally imperceptible upon real-time rendering of the video[see, e.g., pages 6-7, paragraph [0026], pages 8-11, paragraphs [0031] - [0038]].

Claim 2 recites that the selecting of claim 1 includes selecting the second frame so that the repetition of the embedded identification data is imperceptible to the human conscious mind when rendered [see, e.g., paragraph [0026] on pages 6-7 and paragraph [0038], page 11].

Claim 8 recites that the second frame of claim 2 is selected so that the repetition of the embedded identification data is imperceptible to the unconscious human mind [see, e.g., paragraph [0026], page 6 and paragraph [0038], page 11].

Claim 3 recites that the identification data of claim 1 is embedded in the same frame location in each of the first and second frames [see, e.g., paragraph [0046], spanning pages 13-14].

Claim 5 recites a detection method for the video embedded according to claim 1, including providing device-aided character recognition of the first or second frames to detect the identification data [see, e.g., paragraph [0045], page 13].

Claim 12 recites that each of the plurality of identifiers of claim 11 is embedded to be spatially located in a separate frame location with respect to each other [see, e.g., paragraph [0043], pages 11-12, paragraph [0035], page 9].

Claim 23 recites a method of marking content with auxiliary data, the method is characterized in that the auxiliary data is embedded in the content prior to distribution or projection of the content so as to be humanly perceptible if examined in a finite segment or frame of the content [see, e.g., paragraph [0026] on pages 6-7, and paragraphs [0031] - [0037] on pages 8-11], but is embedded in the content so as to be humanly imperceptible when examined as the content is rendered or projected in real-time [see, e.g., paragraph [0026] on pages 6-7, and paragraphs [0031] - [0037] on pages 8-11].

Claim 27 recites a method of steganographically hiding data in media content, wherein the media content comprises a plurality of segments including masking content [see, e.g., Fig. 2

and Figs. 3a-3b, where the "non-embedded frames" comprise masking content]. The method is characterized in that at least two of the media segments are provided with the data prior to distribution or projection of the media content, wherein the data comprises humanly perceptible data [see, e.g., paragraph [0026] on pages 6-7, and paragraphs [0031], [0032] and [0038]], and wherein the data remains perceptible upon individual examination of the at least two media segments but consciously imperceptible as the media content is rendered in real time since the data is below a perceptual threshold due to the masking content [see, e.g., paragraph [0026] on pages 6-7, and paragraphs [0031], [0032] and [0038]].

Claim 37 recites a method of marking content with auxiliary data comprising: obtaining content; embedding auxiliary data in the content through modifications of portions of the content, the modifications occurring prior to distribution or projection of the content [see, e.g., pages 6-7, paragraph [0026], pages 8-11, paragraphs [0031] - [0038]], the modifications being humanly perceptible if examined in a finite segment or frame of the content, but provided in the content so as to be humanly imperceptible when examined as the content is rendered or projected in real-time; and distributing or projecting the content [see, e.g., pages 6-7, paragraph [0026], pages 8-11, paragraphs [0031] - [0038]].

(Of course, additional specification support can be found throughout the application as filed. Thus, citations to specific page and paragraph numbers are by way of example and should not limit specification support or claim scope.)

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1-16, 23, 25, 27-30, 33 and 35-40 stand finally rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,950,532 B1 (hereafter referred to as "the Schuman patent" or simply as "Schuman").

ARGUMENT

Rejections under U.S.C. 102(b) over Schuman

Claim 40

Independent claim 40 recites:

40. *A detecting method comprising:*

obtaining content, the content including auxiliary data embedded therein, the embedding being accomplished through modifications of portions of the content, the modifications occurring prior to obtaining the content, the modifications being humanly perceptible if examined in a finite segment or frame of the content, but provided in the content so as to be humanly imperceptible when examined as the content is rendered or projected in real-time;

averaging a plurality of content portions; and

detecting the auxiliary data from data representing averaged content portions, the auxiliary data being relatively more detectable from the data representing averaged content portions compared to individual portions including the auxiliary data.

Schuman does not have each and every limitation of claim 40; namely, it does not have "averaging" a plurality of content portions, and detecting from data representing "averaged" content portions.

It is well settled that in order for an Examiner to establish a *prima facie* case of anticipation, each and every element of the claimed invention, arranged as required by the claim, must be found in a single prior art reference, either expressly or under the principles of inherency. *See generally*, In re Schreiber, 128 F.3d 1473, 1477 (Fed. Cir. 1997); Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 677-78 (Fed. Cir. 1988); Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

Schuman does not anticipate claim 40 because it does not include – either expressly or inherently – at least averaging a plurality of content portions, and detecting auxiliary data from

data representing averaged content portions, in combination with its other claim elements.

One of ordinary skill in the art would read the terms "averaging" and "averaged" in claim 40 according to their conventional meanings. The online Merriam-Webster dictionary provides the following definitions for the term "average:"

> *1a: a single value (as a mean, mode, or median) that summarizes or represents the general significance of a set of unequal values* ***b: MEAN****1b*
>
> *2 a: an estimation of or approximation to an arithmetic mean* ***b:*** *a level (as of intelligence) typical of a group, class, or series <above the average>*
>
> *[3: a ratio expressing the average performance especially of an athletic team or an athlete computed according to the number of opportunities for successful performance.]*

See http://www.merriam-webster.com/dictionary/average. (The specification uses the terms "average," "averaging" and "averaged" consistently with the above first two definitions.)

The final Office Action cited Schuman at Col. 6, lines 24-34, Col. 6, lines 33-43 and Col. 7, lines 42-52 as meeting these features. *See* the final Office Action, page 8, last two lines.

We respectfully disagree with this analysis.

For example, while these passages discuss timing of imaging devices, temporal expansion, spacing of image elements, and disruption directives, there is no discussion regarding detecting auxiliary data from data representing averaged content portions.

The final Office Action further alleges that the term "*spacing*" means "*averaging*" in the context of claim 40. *See* the final Office Action, page 9, lines 15-23, *citing* Schuman at Col. 6, lines 16-24 and lines 33-43. This is an improper reading of Schuman, one that an ordinarily skilled artisan would not make.

Schuman's reason for his "spacing" is to provide so-called moiré patterns in a recorded image. *See* Schuman at Col. 6, lines 21-24.

Such a disclosure would not lead one of ordinary skill in the art to average a plurality of content portions, and detect auxiliary data from data representing averaged content portions,

where the auxiliary data is relatively more detectable from the data representing averaged content portions compared to individual portions including the auxiliary data, as recited in claim 40.

The final rejection of claim 40 should be reversed since it does not include each and every limitation of claim 40; namely, it does not include at least "averaging" a plurality of content portions, and detecting from data representing "averaged" content portions.

Claim 16

Dependent claim 16 recites:

16. A detection method for the video embedded according to claim 1, comprising averaging a plurality of the video frames including the first and second frames, wherein the averaging improves the signal to noise ratio of the identification data to video content.

> *Schuman does not have each and every limitation of claim 16; namely, it does not have averaging a plurality of the video frames including the first and second frames, wherein the averaging improves the signal to noise ratio of the identification data to video content.*

For an Examiner to establish a *prima facie* case of anticipation, each and every element of the claimed invention, arranged as required by the claim, must be found in a single prior art reference, either expressly or under the principles of inherency. *See generally*, In re Schreiber, 128 F.3d 1473, 1477 (Fed. Cir. 1997); Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 677-78 (Fed. Cir. 1988); Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

Schuman does not anticipate claim 16 because it does not include – either expressly or inherently – at least averaging a plurality of the video frames including the first and second frames, wherein the averaging improves the signal to noise ratio of the identification data to video content.

The final Office Action uses the same rational to reject claim 16 as it did to reject claim 40. *See* the final Office Action, page 10, lines 7-19. That is, the final Office Action equates "spacing" with "averaging".

As discussed above with respect to claim 40, these "spacing" does not mean the same thing as "averaging".

Schuman uses "spacing" to provide so-called moiré patterns in a recorded image. *See* Schuman at Col. 6, lines 21-24. In claim 16, the averaging improves the signal to noise ratio of the identification data to video content.

We respectfully request that the final rejection of claim 16 be reversed since Schuman fails to disclose every feature in claim 16.

Claim 33

Dependent claim 33 recites:

33. A detector to detect the data provided according to claim 28, wherein the detector averages a plurality of the video frames so that the provided data becomes consciously perceptible.

Schuman does not have each and every limitation of claim 33; namely, a detector averaging a plurality of the video frames so that the provided data becomes consciously perceptible.

To establish a *prima facie* case of anticipation, each and every element of the claimed invention, arranged as required by the claim, must be found in a single prior art reference, either expressly or under the principles of inherency. *See generally*, In re Schreiber, 128 F.3d 1473, 1477 (Fed. Cir. 1997); Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 677-78 (Fed. Cir. 1988); Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

Schuman does not anticipate claim 33 because it does not include – either expressly or inherently – at least a detector averaging a plurality of the video frames so that the provided data becomes consciously perceptible.

The cited Schuman passage at Col. 6, lines 40-43 (see the final Office Action, page 11, first paragraph) discusses disruption content becoming visible when played due to temporal

expansion facilitated by timing differences between an IRD (e.g., a camcorder) and a IGD (e.g., a movie projector).

Again, there is no discussion of averaging here. Moreover, the discussion of temporal expansion would not lead one of ordinary skill in the art to consider averaging video frames.

To this point, we note an overstatement in the final Office Action. On page 11, lines 11-12, the final Office Action states "...becomes visible because the frames-per-second timing difference between the IRD and IGD favors displaying the disruption content, ***on average*** [emphasis added]." To be clear, the terms "on average" are not discussed in the cited Schuman passages.

The final rejection of claim 33 should be reversed since it does not include each and every limitation of claim 33; namely, it does not include a detector averaging a plurality of the video frames so that the provided data becomes consciously perceptible.

Claim 1 (and dependent claims 4, 6-11 and 13-15)

Independent claim 1 recites:

1. A method of embedding identification data in video, the video comprising a plurality of video frames, said method comprising:

embedding the identification data in a first video frame prior to distribution or projection of the video, the embedded identification data being visually perceptible upon examination of the first frame;

selecting a second video frame, wherein the first and second video frames are separate frames; and

embedding the identification data in the second video frame prior to distribution or projection of the content, the embedded identification data being visually perceptible upon examination of the second frame, wherein the identification data is generally imperceptible upon real-time rendering of the video.

To establish a *prima facie* case of anticipation, each and every element of the claimed invention, arranged as required by the claim, must be found in a single prior art reference, either expressly or under the principles of inherency. *See generally*, In re Schreiber, 128 F.3d 1473, 1477 (Fed. Cir. 1997); Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 677-78 (Fed. Cir. 1988); Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

Schuman does not anticipate claim 1 because it does not include – either expressly or inherently – at least *embedding identification data **in** a first video frame* prior to distribution or projection of the video, and *embedding the identification data **in** the second video* frame prior to distribution or projection of the content, the embedded identification data being visually perceptible upon examination of the second frame, wherein the identification data is *generally imperceptible* upon real-time rendering of the video, in combination with other features of claim 1.

The cited Schuman passage, Col. 7, lines 42-53 (*see* the final Office Action, page 2, last paragraph) states that so-called "disruption directives" may be carried in digital film data itself. This Schuman passage is reproduced, below, for the Board's convenience:

> *These externally provided disruption directives may be delivered through any standard electronic delivery mechanism such as modem connections, internet connections, hard media, or satellite. Correspondingly, in a full digital version, this information may also be in the control stream, or carried in the actual digital film data itself, whether compressed or uncompressed. The control information may determine characteristics of the disruption such as the area or zone of the frame to be disrupted and which effect to produce in that zone. The localized disruption may be pre-authored or dynamically calculated.*

These "disruption directives" cooperate with a so-called "disruptor." The disrupter uses the disruption directives to disrupt projection by introducing anomalies or modulation in projected film. *See* Col. 5, lines 11-14, Col. 8, lines 52-64 and Figs. 1-6. Thus, these "disruption directives" control or influence the disrupter in introduce separate anomalies in projected film.

The relied upon Schuman passage, Col. 7, lines 42-53, does not embed the disruption directives (or disrupter control information) **in** the *first and second* frames so as to be *visually perceptible upon examination* of the first frame and second frame, but generally *imperceptible* upon real-time rendering of the video. There is no mention of this at all.

Instead, Schuman's disruption directives (or control information) include information that controls the disrupter to insert anomalies or modulations during projection. Thus, the "disruption directives" are not the "projected anomalies" that are contained in projected video.

Additionally, the projected anomalies are introduced during projection, and not prior projection as required by claim 1.

In summary, Schuman does not anticipate claim 1 since it does not have at least *embedding identification data **in** a first video frame prior to* distribution or projection of the video, and *embedding the identification data **in** the second video* frame *prior to* distribution or projection of the content, the embedded identification data being visually perceptible upon examination of the second frame, wherein the identification data is *generally imperceptible* upon real-time rendering of the video, in combination with other features of the claim

(The Examiner points to Col. 17, lines 29-34, to "clearly teach" the features of the invention. *See* the final Office Action, page 12, last paragraph. We disagree. This Schuman passage merely recites: "*One skilled in the art will recognize that any image generation device with the proper timing may be used to create images as per the disclosed invention.*" This statement provides no additional details to anticipate the subject claim language.)

We respectfully request for the final rejection of claim 1 to be reversed.

Claim 2

Dependent claim 2 recites:

2. The method of claim 1, wherein the selecting comprises selecting the second frame so that the repetition of the embedded identification data is imperceptible to the human conscious mind when rendered.

Schuman does not have each and every limitation of claim 2; namely, an act of selecting that includes selecting a second frame so that the repetition of the embedded identification data is imperceptible to the human conscious mind when rendered.

Schuman does not anticipate claim 2 because it does not include – either expressly or inherently – at least an act of selecting that includes selecting a second frame so that the repetition of the embedded identification data is imperceptible to the human conscious mind when rendered.

The relied upon Schuman Col. 6, lines 24-33, passage ("human eye may not detect them") relies on "reduced intensity" of generated images and not repetition of embedded identification data.

In this regard, we submit that one of ordinary skill in the art will disagree with the Examiner's interpretation of claim 2 on page 13, lines 7-12, of the final Office Action. Citing Schuman at Col. 6, lines 17-21, the Examiner suggests that "intensity" refers to "intensity of repetition".

There is no discussion in Schuman to support this interpretation. In fact, in the context of the cited passage (including Col. 6, lines 17-34) "intensity" should be interpreted as "brightness" or "signal strength".

The final rejection of claim 2 should be reversed since Schuman does not include – either expressly or inherently – at least an act of selecting that includes selecting a second frame so that the repetition of the embedded identification data is imperceptible to the human conscious mind when rendered.

Claim 8

Dependent claim 8 recites:

8. The method of claim 2, wherein the second frame is selected so that the repetition of the embedded identification data is imperceptible to the unconscious human mind.

Schuman does not have each and every limitation of claim 8; namely, selecting a second frame so that the repetition of the embedded identification data is imperceptible to the unconscious human mind.

The final Office Action cites Schuman at Col. 6, lines 24-34 to meet the features of claim 8, including the "imperceptible" feature. *See* the final Office Action, page 4, third paragraph. Schuman mentions imperceptibility (e.g., "the human eye may not detect them") at Col. 6, lines 31-34, and proposes a solution by: "If the generated images are of a ***reduced intensity***, the human eye may not detect them." (*emphasis added*).

Schuman's imperceptibility relies on "reduced intensity," and not on repetition of embedded identification data. In the context of the cited passage (including Col. 6, lines 17-33) "intensity" should be interpreted as "brightness" or "signal strength".

The final rejection of claim 8 should be reversed since Schuman does not include – either expressly or inherently – at least selecting a second frame so that the repetition of the embedded identification data is imperceptible to the unconscious human mind.

Claim 3

Dependent claim 3 recites:

3. The method of claim 1, wherein the identification data is embedded in the same frame location in each of the first and second frames.

Schuman does not have each and every limitation of claim 3; namely, identification data embedded in a same frame location in each of first and second frames.

Claim 3 recites that the identification data (of claim 1) is embedded in the same frame location in each of the first and second frames.

Contrary to the assertions in the final Office Action (*see* pages 14-15, paragraph 9), the relied upon Schuman passage at Col. 6, lines 58-67, does not discuss this feature. Rather, Schuman discusses that identifying information may indicate a location and time that an event was recorded. We reproduce Schuman's Col. 6, lines 58-67 section, below, for the Board's

convenience:

> *Images produced by the disclosed techniques may distort current images, or create new ones. In the case of producing new images, those images may include but are not limited to text or logos identifying the content as copyright protected. Further, the content may also include identifying information or watermarks such as but not limited to location and time of the event being recorded. In some instances, it may be desirable to use the present invention to generate human perceivable visual images. Such images may be used to mark the content with messages such as "test showing", "proof", "sample", "copy pro-[tected", or the like.]*

As the Board can see, there is no discussion or suggestion in the above quoted passage of identification data (of claim 1) that is embedded in the same frame location in each of the first and second frames.

Additionally, the parenthetical on page 3 of the final Office Action (and the remarks on page 13) seems to evidence a misunderstanding of claim 1: ("e.g., if a human *is to perceive a message*, the message has to be in substantially the same location from one frame to the next"). Claim 1 recites that embedded data is preferably ***im****perceptible when rendered in real-time*. The final Office Action's remarks assume perceptibility upon rendering, which is counter to the recited language of claim 3(1).

We respectfully request that the final rejection of claim 3 be reversed since Schuman does not include – either expressly or inherently – at least identification data embedded in a same frame location in each of first and second frames.

Claim 5

Dependent claim 5 recites:

5. A detection method for the video embedded according to claim 1, comprising providing device-aided character recognition of the first or second frames to detect the identification data.

Schuman does not have each and every limitation of claim 5; namely, an act of providing device-aided character recognition of the first or second frames to detect the identification data.

Claim 5 recites an act of providing device-aided character recognition, e.g., OCR or other character recognition.

The final Office Action cites Schuman at Col. 6, lines 58-67 to meet these features. That Schuman passage, however, is lacking since it does not discuss device-aided character recognition. While it mentions "text," there is no discussion of recognizing such text with device-aided, character recognition techniques. We reproduce Schuman's Col. 6, lines 58-67 section, below, for the Board's convenience:

Images produced by the disclosed techniques may distort current images, or create new ones. In the case of producing new images, those images may include but are not limited to text or logos identifying the content as copyright protected. Further, the content may also include identifying information or watermarks such as but not limited to location and time of the event being recorded. In some instances, it may be desirable to use the present invention to generate human perceivable visual images. Such images may be used to mark the content with messages such as "test showing", "proof", "sample", "copy pro-[tected", or the like.]

As the Board can see, there is no discussion or suggestion in the above passage of an act of providing device-aided character recognition, e.g., OCR or other character recognition, to detect identification data.

The final Office Action justifies its citation to the above Schuman passage by saying any such detection includes "humanly perceiving the message." *See* the final Office Action, page 3, last 3 lines. But humanly perceiving a message is not device-aided character recognition as claimed. This statement evidences a misinterpretation of the claim in the final Office Action.

The final Office Action further states that "...a device aids (either the IRD or the IGD) in the character recognition." *See* the final Office Action, page 14, lines 14-15.

This statement is not helpful because Schuman does not disclose or suggest that the IRD (e.g., a camcorder) or the IGD (e.g., a movie projector) include device-aided character recognition capability, e.g., OCR or other character recognition, to detect identification data from first or second frames.

We respectfully request that the final rejection of claim 5 be reversed since Schuman does not include – either expressly or inherently – at least an act of providing device-aided character recognition of the first or second frames to detect the identification data.

Claim 12

Dependent claim 12 recites:

12. The method of claim 11, wherein each of the plurality of identifiers is embedded to be spatially located in a separate frame location with respect to each other.

Schuman does not have each and every limitation of claim 12; namely, each of a plurality of identifiers is embedded to be spatially located in a separate frame location with respect to each other.

Claim 12 is dependent on claims 11 and 1. These claims discuss first and second different frames. In this context, claim 12 requires that each of the plurality of identifiers is embedded to be spatially located in a separate frame location with respect to each other. That means, the spatial location of each identifier from a first frame to a second frame is different.

The final Office Action cites the now familiar Schuman, Col. 6, lines 58-67, for these features.

But there is no discussion at the cited passage of each of a plurality of identifiers is embedded to be spatially located in a separate frame location with respect to each other. We reproduce Schuman's Col. 6, lines 58-67 section, below, for the Board's convenience:

Images produced by the disclosed techniques may distort current images, or create new ones. In the case of producing new images, those images may include but are not limited to text or logos identifying the content as copyright protected.

Further, the content may also include identifying information or watermarks such as but not limited to location and time of the event being recorded. In some instances, it may be desirable to use the present invention to generate human perceivable visual images. Such images may be used to mark the content with messages such as "test showing", "proof", "sample", "copy pro-[tected", or the like.]

We respectfully request that the final rejection of claim 12 be reversed since Schuman does not include – either expressly or inherently – at least each of a plurality of identifiers is embedded to be spatially located in a separate frame location with respect to each other.

Claim 23 (and dependent claim 25)

Independent claim 23 recites:

23. A method of marking content with auxiliary data, the method characterized in that the auxiliary data is embedded in the content prior to distribution or projection of the content so as to be humanly perceptible if examined in a finite segment or frame of the content, but is embedded in the content so as to be humanly imperceptible when examined as the content is rendered or projected in real-time.

The final Office Action cites Schuman at Col. 6, lines 24-34, for the claim features of "*so as to be humanly perceptible if examined in a finite segment or frame of the content, but is embedded in the content so as to be humanly imperceptible when examined as the content is rendered or projected in real-time*." *See* the final Office Action, page 6, first paragraph.

We disagree.

As discussed above with respect to claim 1, this Schuman passage discusses that so-called disruption content can be included in projected content. We reproduce this passage, below, for the Board's convenience:

An image element may include a single pixel, a group of pixels or an image frame. A generated image may include any modulated image generated by any IGD including a projector, a projector lamp, or a spot light. Disruption content may

> *have a multitude of new content including but not limited to images with anomalies, black frames, random patterns, intensity variations, and other predetermined patters such as moire patterns. If the generated images are of a reduced intensity, the human eye may not detect them. However, because of the timing of the imaging device, the generated images may be captured and reconstructed for much longer periods of time, creating anomalous images.*

As the Board can see, there is no discussion in the above passage to anticipate control information that is perceptible if examined in a finite segment, but that is imperceptible when examined as the content is rendered.

Moreover, the above quoted passage would lead a skilled artisan away from claimed combination. For example, the cited passage states: "*If the generated images are of a reduced intensity, the human eye may not detect them.*" This is different than control information that **is** perceptible if examined in a finite segment, as claimed.

The final Office Action also misinterprets Schuman. For example, the final Office Action cites to disruption directives (Schuman at Col. 7, lines 42-52; *see* the final Office Action, page 6, first paragraph) but then says that a generated image may contain disruption content. Recall from the discussion above under claim 1, however, that the disruption directives *control the disruptor* to introduce anomalies in projected content. The disruption directives are not the projected anomalies themselves.

The final Office Action then cites to Schuman at Col. 17, lines 29-34, to somehow cure the problems noted above. *See* the final Office Action, page 15, last two lines above paragraph 11. This Schuman passage is reproduced, below, for the Board's convenience:

> *One skilled in the art will recognize that any image generation device with the proper timing may be used to create images as per the disclosed invention. Therefore, unless such changes and modifications depart from the scope of the present invention, they should be construed as being included therein.*

This statement is not helpful to remedy the above deficiencies. Moreover, the final Office Action does not specify – or even offer evidence of – whether some known "image generation device" at the time of Schuman's filing date possessed the missing elements to anticipate claim 23.

We respectfully request that the final rejection of claim 23 be reversed since Schuman does not have each and every element of claim 23, either expressly or inherently, arranged as recited in claim 23.

Claim 27 (and dependent claims 28-30, 35 and 36)

Independent claim 27 recites:

27. A method of steganographically hiding data in media content, wherein the media content comprises a plurality of segments including masking content, said method being characterized in that at least two of the media segments are provided with the data prior to distribution or projection of the media content, wherein the data comprises humanly perceptible data, and wherein the data remains perceptible upon individual examination of the at least two media segments but consciously imperceptible as the media content is rendered in real time since the data is below a perceptual threshold due to the masking content.

Claim 27 recites features that are generally analogous to claim 23.

Thus, the final rejection of claim 27 should be reversed for at least analogous reasons to those stated above with respect to claim 23.

Claim 37 (and dependent claims 38 and 39)

Dependent claim 37 recites:

37. A method of marking content with auxiliary data comprising:

obtaining content;

embedding auxiliary data in the content through modifications of portions of the content, the modifications occurring prior to distribution or projection of the content, the modifications being humanly perceptible if examined in a finite segment or frame of the content, but provided in the content so as to be humanly imperceptible when examined as the content is rendered or projected in real-time; and

distributing or projecting the content.

Claim 37 recites features that are generally analogous to claim 23.

Thus, the final rejection of claim 37 should be reversed for at least analogous reasons to those stated above with respect to claim 23.

CONCLUSION AND REQUEST FOR REVERSAL

Appellant respectfully requests the Board to reverse the final rejection of the pending claims.

Respectfully submitted,

Date: August 6, 2008

DIGIMARC CORPORATION

Customer No. 23735

Telephone: 503-469-4685
FAX: 503-469-4777

By: /Steven W. Stewart, Reg. No. 45,133/
Steven W. Stewart
Registration No. 45,133

CLAIMS APPENDIX

1. (previously presented): A method of embedding identification data in video, the video comprising a plurality of video frames, said method comprising:

embedding the identification data in a first video frame prior to distribution or projection of the video, the embedded identification data being visually perceptible upon examination of the first frame;

selecting a second video frame, wherein the first and second video frames are separate frames; and

embedding the identification data in the second video frame prior to distribution or projection of the content, the embedded identification data being visually perceptible upon examination of the second frame, wherein the identification data is generally imperceptible upon real-time rendering of the video.

2. (previously presented): The method of claim 1, wherein the selecting comprises selecting the second frame so that the repetition of the embedded identification data is imperceptible to the human conscious mind when rendered.

3. (original): The method of claim 1, wherein the identification data is embedded in the same frame location in each of the first and second frames.

4. (previously presented): A detection method for the video embedded according to claim 1, comprising visually inspecting the first or second frames.

5. (previously presented): A detection method for the video embedded according to claim 1, comprising providing device-aided character recognition of the first or second frames to detect the identification data.

6. (original): The method of claim 1 wherein the identification data is embedded in each of the first and second frames in the form of a digital watermark, yet the embedded digital watermarks remain visually perceptible upon examination of the first frame and second frame.

7. (original): The method of claim 6, wherein the watermark visibility is due at least in part to watermark signal strength or intensity.

8. (original): The method of claim 2, wherein the second frame is selected so that the repetition of the embedded identification data is imperceptible to the unconscious human mind.

9. (previously presented): The method of claim 1, wherein the identification data comprise at least one of text, numbers, codes, images or graphics.

10. (original): The method of claim 3, wherein the same location comprises a window.

11. (original): The method of claim 1, wherein the identification data comprise a plurality of identifiers.

12. (original): The method of claim 11, wherein each of the plurality of identifiers is embedded to be spatially located in a separate frame location with respect to each other.

13. (original): The method of claim 12, wherein the separate frame locations are the same for each of the first frame and second frames.

14. (previously presented): The method of claim 11, wherein the plurality of identifiers comprise at least two identifications selected from a group comprising: content identification, a distributor identification, copy restriction information, and an exhibition identification.

15. (previously presented): The method of claim 1, wherein the identification data comprises at least one identification selected from a group of identifications comprising: content identification, a distributor identification, copy restriction information, and an exhibition identification.

16. (previously presented): A detection method for the video embedded according to claim 1, comprising averaging a plurality of the video frames including the first and second frames, wherein the averaging improves the signal to noise ratio of the identification data to video content.

17 – 22. canceled.

23. (previously presented): A method of marking content with auxiliary data, the method characterized in that the auxiliary data is embedded in the content prior to distribution or projection of the content so as to be humanly perceptible if examined in a finite segment or frame of the content, but is embedded in the content so as to be humanly imperceptible when examined as the content is rendered or projected in real-time.

24. canceled.

25. (original): The method of claim 23, wherein the content comprises video.

26. canceled.

27. (previously presented): A method of steganographically hiding data in media content, wherein the media content comprises a plurality of segments including masking content, said method being characterized in that at least two of the media segments are provided with the data prior to distribution or projection of the media content, wherein the data comprises humanly perceptible data, and wherein the data remains perceptible upon individual examination of the at least two media segments but consciously imperceptible as the media content is rendered in real time since the data is below a perceptual threshold due to the masking content.

28. (original): The method of claim 27 wherein the media content comprises video, the plurality of segments comprises video frames and the masking content comprises video frames without the data.

29. (previously presented): The method of claim 28, wherein the data comprises an image of at least one of a hexadecimal number, binary number or decimal number.

30. (original) The method of claim 28, wherein the data comprises an image of text.

31 – 32. canceled.

33. (original): A detector to detect the data provided according to claim 28, wherein the detector averages a plurality of the video frames so that the provided data becomes consciously perceptible.

34. canceled.

35. (previously presented): The method of claim 27 wherein the auxiliary data comprises an identifier comprising 1's and 0's, where the 1's are embedded in the content through modification to content data.

36. (previously presented): The method of claim 35 wherein the 0's are represented in the content through the absence of modification to content data.

37. (previously presented): A method of marking content with auxiliary data comprising:

obtaining content;

embedding auxiliary data in the content through modifications of portions of the content, the modifications occurring prior to distribution or projection of the content, the modifications being humanly perceptible if examined in a finite segment or frame of the content, but provided in the content so as to be humanly imperceptible when examined as the content is rendered or projected in real-time; and

distributing or projecting the content.

38. (previously presented): The method of claim 37 wherein the content comprises video.

39. (previously presented): The method of claim 38 wherein the auxiliary data comprises a plural-bit identifier comprising 1's and 0's, where the 1's are embedded in the content through modification to content data.

40. (previously presented): A detecting method comprising:

obtaining content, the content including auxiliary data embedded therein, the embedding being accomplished through modifications of portions of the content, the modifications occurring prior to obtaining the content, the modifications being humanly perceptible if examined in a finite segment or frame of the content, but provided in the content so as to be humanly imperceptible when examined as the content is rendered or projected in real-time;

averaging a plurality of content portions; and

detecting the auxiliary data from data representing averaged content portions, the auxiliary data being relatively more detectable from the data representing averaged content portions compared to individual portions including the auxiliary data.

EVIDENCE APPENDIX

(No Evidence)

RELATED PROCEEDINGS APPENDIX

(No Related Proceedings)